



Pre-Algebra Workbook Solutions

Numbers and negative numbers

NUMBER SETS

■ 1. The number 0 is included in all the number sets except _____ numbers.

Solution:

natural and irrational

■ 2. The numbers 0, 1, 2, 3 are considered _____ numbers.

Solution:

whole

■ 3. Positive and negative whole numbers are called _____.

Solution:

integers



■ 4. Fractions and decimals can be considered _____ numbers

Solution:

real

■ 5. Given the odd number set $\{1, 3, ?, 7\}$, what is the missing number?

Solution:

5

■ 6. The number set $\{2, 4, 6, 8\}$ shows a set of _____ numbers.

Solution:

even

■ 7. What is the real number that's halfway between 1 and 2?

Solution:



$$1\frac{1}{2}$$

■ 8. The number sets that include negative numbers are _____, _____, _____, and _____ numbers.

Solution:

real, rational, irrational, integer



IDENTITY NUMBERS

- 1. Find the sum.

$$4 + 0 =$$

Solution:

4

- 2. Find the product.

$$15 \cdot 1$$

Solution:

15

- 3. The identity number for addition is 0 because when you add 0 to a number the value does _____ change.

Solution:



not

■ 4. The _____ number for multiplication is 1 because when you multiply a number by 1, the value does not change.

Solution:

identity

■ 5. Given the problem $10 + 0 = 10$, the 0 is the identity number for _____.

Solution:

addition

■ 6. Given the problem $20 \cdot 1 = 20$, the 1 is the identity number for _____.

Solution:

multiplication



■ 7. When you add 0 to a number, how would the point move on a number line (move to the left, move to the right, or stay the same)?

Solution:

stay the same

■ 8. When you look at the problem $8 \cdot 1 = 8$, this means that there are 8 items in _____ group(s).

Solution:

1



OPPOSITE OF A NUMBER

- 1. What is the opposite of -15 ?

Solution:

15

- 2. What is the opposite of 22?

Solution:

-22

- 3. What is the opposite of $\frac{2}{3}$?

Solution:

$-\frac{2}{3}$



■ 4. Complete the statement.

Opposites are numbers that are equal distance from _____.

Solution:

0 or the origin

■ 5. What is the only number that is its own opposite?

Solution:

0

■ 6. Complete the statement.

When looking at a number line, the negative numbers are to the _____ of 0 and the positive numbers are to the _____ of 0.

Solution:

left, right



■ 7. Complete the statement.

We know 5 and -5 are opposite numbers because they are both _____ units away from 0.

Solution:

5

■ 8. What is the opposite of -5.3 ?

Solution:

5.3



ADDING AND SUBTRACTING SIGNED NUMBERS

- 1. Simplify the expression.

$$-4 + 2$$

Solution:

$$-2$$

- 2. Simplify the expression.

$$-11 - 8$$

Solution:

$$-19$$

- 3. When you add two negative numbers, you'll always get a _____ number.

Solution:



negative

■ 4. Simplify the expression.

$$-19 - 26$$

Solution:

$$-45$$



MULTIPLYING SIGNED NUMBERS

■ 1. Complete the statement.

Multiplying two negative numbers will always result in a _____ number.

Solution:

positive

■ 2. Complete the statement.

Multiplying a negative and a positive number will always result in a _____ number.

Solution:

negative

■ 3. Complete the statement.

Multiplying two positive numbers will always result in a _____ number.



Solution:

positive

■ 4. $12 \cdot -5$

Solution:

Multiplying 12 by 5 gives 60. Because we're multiplying one positive number by one negative number, the result must be negative, so

$$12 \cdot -5 = -60$$

■ 5. $-8 \cdot -6$

Solution:

Multiplying 8 by 6 gives 48. Because we're multiplying one negative number by another negative number, the result must be positive, so

$$-8 \cdot -6 = 48$$



■ 6. $-3 \cdot 5$

Solution:

Multiplying 3 by 5 gives 15. Because we're multiplying one positive number by one negative number, the result must be negative, so

$$-3 \cdot 5 = -15$$

■ 7. $25 \cdot 3$

Solution:

Multiplying 25 by 3 gives 75. Because we're multiplying one positive number by another positive number, the result must be positive, so

$$25 \cdot 3 = 75$$



DIVIDING SIGNED NUMBERS

■ 1. Complete the statement.

Dividing a negative number by a positive number will always result in a _____ number.

Solution:

negative

■ 2. Complete the statement.

Dividing a positive number by a positive number will always result in a _____ number.

Solution:

positive

■ 3. Complete the statement.

Dividing a negative number by a negative number will always result in a _____ number.



Solution:

positive

■ 4. Complete the statement.

Dividing a positive number by a negative number will always result in a _____ number.

Solution:

negative

■ 5. Simplify the expression.

$$-12 \div 2$$

Solution:

-6

■ 6. Simplify the expression.



$$45 \div 5$$

Solution:

9

■ 7. Simplify the expression.

$$-64 \div -8$$

Solution:

8

■ 8. Simplify the expression.

$$24 \div -6$$

Solution:

-4

■ 9. Simplify the expression.



$$-144 \div -12$$

Solution:

12



ABSOLUTE VALUE

- 1. Simplify the expression.

$$|-4|$$

Solution:

The absolute value bars change a negative value inside them into a positive value, so $|-4|$ becomes 4.

- 2. Simplify the expression.

$$|75|$$

Solution:

The value inside the absolute value bars is already positive, so $|75|$ becomes 75.

- 3. Simplify the expression.

$$|-6-5|$$



Solution:

First simplify the subtraction inside the absolute value bars. Subtracting 5 from -6 gives -11 , so

$$|-6 - 5|$$

$$|-11|$$

The absolute value bars change a negative value inside them into a positive value, so $|-11|$ becomes 11.

■ 4. Simplify the expression.

$$|-6| - |7|$$

Solution:

First simplify each set of absolute value bars separately. The absolute value bars change a negative value inside them into a positive value, so $|-6|$ becomes 6, but 7 is already positive so $|7|$ becomes 7.

$$|-6| - |7|$$

$$6 - 7$$

Now finish the subtraction.



$$-1$$

- 5. Simplify the expression.

$$|-5 \cdot 4|$$

Solution:

First simplify the multiplication inside the absolute value bars. Multiplying -5 by 4 gives -20 , so

$$|-5 \cdot 4|$$

$$|-20|$$

The absolute value bars change a negative value inside them into a positive value, so $|-20|$ becomes 20 .

- 6. Simplify the expression.

$$|-5| \cdot |4|$$

Solution:



First simplify each set of absolute value bars separately. The absolute value bars change a negative value inside them into a positive value, so $|-5|$ becomes 5, but 4 is already positive so $|4|$ becomes 4.

$$|-5| \cdot |4|$$

$$5 \cdot 4$$

Now finish the multiplication.

$$20$$

■ 7. Simplify the expression.

$$|-11 + 3| \cdot |-9|$$

Solution:

First simplify the addition inside the first set of absolute value bars.

$$|-8| \cdot |-9|$$

Then simplify each set of absolute value bars separately. The absolute value bars change a negative value inside them into a positive value, so $|-8|$ becomes 8, and $|-9|$ becomes 9.

$$8 \cdot 9$$

$$72$$



- 8. Simplify the expression.

$$|-8-2| \cdot |-4-3|$$

Solution:

First simplify the subtraction inside both sets of absolute value bars.

$$|-10| \cdot |-7|$$

Then simplify each set of absolute value bars separately. The absolute value bars change a negative value inside them into a positive value, so $|-10|$ becomes 10, and $|-7|$ becomes 7.

$$10 \cdot 7$$

$$70$$



